National Qualifications

Biology
Assignment
General assessment information

This pack contains general assessment information for centres preparing candidates for the assignment Component of Higher Biology Course assessment.

It must be read in conjunction with the specific assessment task for this Component of Course assessment, which may only be downloaded from SQA's designated secure website by authorised personnel.

This edition: September 2016 (version 1.3)

Contents

Introduction

This is the general assessment information for Higher Biology assignment.

This assignment is worth 20 marks out of a total of 120 marks available for this Course. The Course will be graded A–D.

Marks for all Course Components are added up to give a total Course assessment mark which is then used as the basis for grading decisions.

This is one of two Components of Course assessment. The other Component is a question paper.

This document describes the general requirements for the assessment of the assignment Component for this Course. It gives general information and instructions for assessors.

It must be read in conjunction with the assessment task for this Component of Course assessment.

Equality and inclusion

This Course assessment has been designed to ensure that there are no unnecessary barriers to assessment. Assessments have been designed to promote equal opportunities while maintaining the integrity of the qualification.

For guidance on assessment arrangements for disabled candidates and/or those with additional support needs, please follow the link to the Assessment Arrangements web page: www.sqa.org.uk/sqa/14977.html

Guidance on inclusive approaches to delivery and assessment in this Course is provided in the *Course Support Notes.*

What this assessment covers

The assessment will assess the skills, knowledge and understanding specified for the assignment in the *Course Assessment Specification*. These are:

- applying knowledge of biology to new situations and analysing information
- selecting information from a variety of sources
- presenting information appropriately in a variety of forms
- processing the information/data collected (using calculations and units, where appropriate)
- drawing valid conclusions and giving explanations supported by evidence/justification
- evaluating experimental/practical investigations
- communicating findings/information effectively

Assessment

Purpose

The purpose of this assessment is to generate evidence for the added value of this Course by means of an assignment.

Assessment overview

Assessment should take place when the candidates are ready to be assessed.

This assignment requires candidates to apply skills, knowledge and understanding to investigate a relevant topic in biology. The topic should draw on one or more of the key areas of the Course. The assessor must review the topic chosen to ensure that it is appropriate.

The assignment offers challenge by requiring skills, knowledge and understanding to be applied in a context that is one or more of the following:

- unfamiliar
- familiar but investigated in greater depth
- integrating a number of familiar contexts

The assessor has responsibility for ensuring that the topic to be investigated by the candidate is sufficiently demanding. Some examples of suitable investigations are provided in the Higher Biology *Course and Unit Support Notes*. None of these examples are mandatory: they are intended simply to illustrate the level of demand that is expected of an assignment at Higher. Assessors and candidates should choose relevant topical contexts appropriate to the learning and teaching, but it is the assessor's responsibility to ensure that the topic will allow the candidate to provide evidence of an appropriate standard to achieve the full range of marks available.

This assignment has two stages:

- a **research** stage
- a **communication** stage

The **research** stage involves gathering information/data from the internet, books, newspapers, journals, experiment/practical activity or any other appropriate source. Candidates must select, use and record their referenced sources. An appropriate experiment/practical activity may be used as one of the data sources. Any practical work undertaken will not be assessed.

Groupwork approaches are acceptable as part of the **research** stage when gathering information/data or undertaking an experiment/practical activity, but assessors must ensure that candidates are able individually to meet the evidence requirements of this assessment.

In the course of their assignment, candidates are required to:

- choose a relevant topic in biology (the assessor must review the appropriateness of the topic chosen)
- state appropriate aim(s)
- research the topic by selecting relevant data/information
- process and present relevant data/information
- analyse data/information
- state conclusion(s)
- evaluate their investigation
- explain the underlying biology of the topic researched
- present the findings of the research in a report

The evidence for this assignment will consist of the report. Of the total of 20 marks available for the assignment, the Marking Instructions provide 15 marks for skills and 5 marks for knowledge and understanding. The table below shows how these marks are allocated to each of the criteria against which the evidence will be assessed.

Criteria	Mark allocation
Aim(s)	1
Applying knowledge and understanding of biology	5
Selecting information	2
Processing and presenting data/information	4
Analysing data/information	2
Conclusion(s)	1
Evaluation	3
Presentation	2

Assessment conditions

Assessors must exercise their professional responsibility in ensuring that evidence submitted by a candidate is the candidate's own work.

Candidates should start the assignment at an appropriate point in the Course. This will normally be when they have started work on the Units in the Course and have sufficient knowledge and skills to undertake the assignment. It is recommended that no more than eight hours is spent on the whole assignment.

This assignment has two stages:

- a **research** stage
- a **communication** stage, during which the report is written

Candidates may access any appropriate resources during the **research** stage of this assignment.

During the **communication** stage of this assignment, candidates should have access to the following resources:

- Material collected by the candidate during the **research** stage. This may include, for example, statistical, graphical, numerical or experimental data; data/information from the internet; published articles or extracts; notes taken from a visit or talk; notes taken from a written or audio-visual source.

The assessor should check that the material used by the candidate in this communication stage conforms to the criteria above. It must not include a prepared report or elements of one.

Candidates may produce their report over a period of time. If the report is done over a number of sessions, then the assessor must retain the candidate's work between sessions. Following completion of the report there should be **no** re-drafting.

As a guide, evidence which meets the requirements of this Component of Course assessment is likely to be 800–1500 words, excluding tables, charts and diagrams.

The requirements of the assignment should be made clear to candidates at the outset.

Reasonable assistance may be provided prior to the formal assessment process taking place. Reasonable assistance may be given on a generic basis to a class or group of candidates. The term 'reasonable assistance' is used to try to balance the need for support with the need to avoid giving too much assistance. If any candidates require more than what is deemed to be 'reasonable assistance', they may not be ready for assessment or it may be that they have been entered for the wrong level of qualification.

In the **research** stage, reasonable assistance may include:

- directing candidates to the Instructions for Candidates
- clarifying instructions/requirements of the task
- advising candidates on the choice of the topic or issue

In the **communication** stage, reasonable assistance may include:

- directing candidates to the Instructions for Candidates
- clarifying instructions/requirements of the task

At any stage, reasonable assistance does **not** include:

- providing model answers
- providing feedback on drafts

The **research** stage will be conducted under some supervision and control. This means that although candidates may carry out some research outwith the learning and teaching setting, assessors should put in place processes for

monitoring progress and ensuring that the work is the candidate's own and that plagiarism has not taken place.

Assessors should put in place mechanisms to authenticate that the research is the candidate's own work. For example:

- regular checkpoint/progress meetings with candidates
- short spot-check personal interviews
- checklists which record activity/progress
- photographs, film or audio evidence
- checking candidate lab books/blogs

Groupwork approaches are acceptable as part of the **research** stage. However, there must be clear evidence for each candidate to show that the candidate has met the evidence requirements.

The **communication** stage will be conducted under a high degree of supervision. This means that:

- candidates must be in direct sight of the assessor (or other responsible person) during the period of the assessment
- candidates must not discuss their work with each other

Evidence to be gathered

The following candidate evidence is required for this assessment:

- a report

The report will be submitted to SQA, within a given timeframe, for marking. The same report cannot be submitted for more than one subject.

General Marking Instructions

General Marking Principles for Higher Biology assignment

This information is provided to help you understand the general principles you must apply when marking candidate responses to this assignment. These principles must be read in conjunction with the detailed Marking Instructions, which identify the key features required in candidate responses.

(a) Marks for each candidate response must always be assigned in line with these general marking principles and the detailed Marking Instructions for this assessment.

(b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

Detailed Marking Instructions for Higher Biology assignment

These detailed Marking Instructions provide the basis on which the general marking principles should be applied.

Read the whole report before assigning any marks. Credit should be given for appropriate information wherever it is given in the report.

Criteria	Expected response	Max mark	Additional guidance	Notes
Aim(s)	States appropriate aim(s)	1	The aim(s) must be clearly stated and appropriate to the investigation undertaken.	The aim **must** describe clearly what is to be investigated, eg 'to investigate the effectiveness of using stem cells to create skin grafts'. Acceptable versions of an aim could be: 'to investigate the effect of altitude training on athletic performance' **NOT** simply: 'to investigate altitude training'. The aim must be stated separately from the title. The word 'aim' does **not** need to be stated.

Criteria	Expected response	Max mark	Additional guidance	Notes
Apply knowledge and understanding of biology	Explains the topic, using the underlying biology	5	**5 marks** should be awarded to a candidate who has: ♦ provided **correct explanations** of the topic researched using biology terms/ideas which are at a depth appropriate to Higher Biology (this **does not** mean the answer has to be 'excellent' or 'complete') **4 marks** should be awarded to a candidate who has: ♦ provided **mostly correct explanations** of the topic researched using biology terms/ideas which are at a depth appropriate to Higher Biology **3 marks** should be awarded to a candidate who has: ♦ provided **mostly correct explanations** of the topic researched using **some** biology terms/ideas which are at a depth appropriate to Higher Biology **2 marks** should be awarded to a candidate who has: ♦ provided **some correct**	Marks will be awarded for expanded descriptions and explanations at Higher level. Ideally the underlying biology would be within one section within the report; however Markers should be aware that candidates may include the underlying biology throughout the report. If any of the candidate's explanation of the underlying biology has been given credit in any other section then that piece of information should not be considered when awarding marks for the underlying biology. If the underlying biology has been copied verbatim from a reference or website then the candidate is not demonstrating understanding and should be awarded **0 marks**. Information which is quoted from references in this section and then explained or expanded upon by the candidate is acceptable. Credit should only be given for underlying biology rather than other general information, eg historical.

Criteria	Expected response	Max mark	Additional guidance	Notes
			explanations of the topic researched using **some** biology terms/ideas which are at a depth appropriate to Higher Biology **1 mark** should be awarded to a candidate who has: ♦ provided **only one correct explanation** of the topic researched using **some** biology terms/ideas which are at a depth appropriate to Higher Biology **0 marks**: The candidate fails to meet the minimum standards required for 1 mark.	It is sufficient for the underlying biology to be relevant to the topic without being specific to the aim.
Select information	Selects sufficient relevant data/information for inclusion in the report	2	This could include raw data from an experiment/practical activity, extracted tables, graphs, diagrams and text. It might include, for example, statistical, graphical, numerical or experimental data; data/information from the internet; published articles or extracts; notes taken from a visit or talk; notes taken from a written or audio-visual source.	This means that the raw data/information **MUST** be included in the report. This could take the form of photocopies of pages from journals, books, print-outs of appropriate sections of webpages, tables of data from experiments conducted by the candidate, etc. Web links, book and journal references are **not** sufficient on their own.

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<tr><th>Criteria</th><th>Expected response</th><th>Max mark</th><th>Additional guidance</th><th>Notes</th></tr>
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2 marks: The data/information selected by the candidate for presentation/ processing/analysis is both relevant and sufficient.

1 mark: The data/information selected by the candidate for presentation/ processing/analysis is relevant but insufficient.

0 marks: The data/information selected by the candidate for presentation/ processing/analysis is not relevant.
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There must be relevant data from a minimum of two different sources, which relate to the aim.

For the data/information to be sufficient it should allow the candidate to draw a conclusion that addresses some aspect(s) of the aim/topic.

For 1 mark there must be relevant data from one source, which relates to the aim.

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<tr><th>Number of sources</th><th>Relevant</th><th>Sufficient</th><th>Number of marks</th></tr>
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Criteria	Expected response	Max mark	Additional guidance	Notes
Process and present data/information	Data/information is processed and presented	4	**Processing** can include, for example: plotting graphs, populating tables; although the marks are awarded for processing, it must be clear where the raw or extracted data/information came from. **Presenting** processed data/information must include one of the following formats: graph, table, chart or diagram. Sufficient detail should be included to convey the data/information. The candidate must clearly reference the source of the original data. **4 marks** should be awarded to a candidate who has processed and presented all data/information correctly and appropriately. **3 marks** should be awarded to a candidate who has processed all data/information correctly and appropriately and presented most data/information correctly and appropriately.	The raw data/information must be included in the report in order for marks to be awarded for processing and presenting. One source of raw data/information must be processed and presented. The chosen format must be a graph, table, chart or diagram; otherwise no marks can be awarded in this section. If more than one source of raw data/information has been processed and presented as a graph, table, chart or diagram mark **all of them** and award marks for the best one. To attain 4 marks, processing and presenting must be correct, eg all appropriate labels, units, headings, must be included, almost all (90%) points plotted/table content must be correct and there must be cross referencing directly associated with the raw/presented data/information.

Criteria	Expected response	Max mark	Additional guidance	Notes
			or who has processed most data/information correctly and appropriately and presented all data/information correctly and appropriately. **2 marks** should be awarded to a candidate who has processed and presented some of the data/information correctly and appropriately. **1 mark** should be awarded to a candidate who has processed and presented little data/information correctly and appropriately. **0 marks**: The candidate fails to meet the minimum standards required for 1 mark.	**1 mark:** presentation format is correct. **1 mark:** all headings/labels/units are correct. **1 mark:** almost all (90%) of processing is correct, ie plotting/table contents etc. **1 mark:** cross-referencing directly associated with the raw/presented data/information so that the full reference can be identified in the report. If there are no references at the end of the report, for each piece of data, then to award the 'cross-referencing' mark a full reference (eg URL) must be given *with* the data. Information from graphs without grid lines cannot be processed accurately. If either processing or presenting is not included, then no marks can be awarded for this section. The presentation format should be appropriate to the data/information. Processing should be at a level appropriate to Higher Biology.

Criteria	Expected response	Max mark	Additional guidance	Notes
				Graphs ♦ The scale on any axis must have a number at the origin, a number equal to or above the highest plot and at least one other number in between. ♦ Each axis needs its own number at the origin. However, if that number is zero for both scales, a common zero is acceptable. ♦ Scale breaks are not acceptable. ♦ Any graph must use at least 50% of the chosen scale. ♦ The full axis label(s) must be copied exactly from the table of results with no deviations or abbreviations. ♦ The plot for a **line graph** must have no 'extensions' above or below the first and last points and a straight line should go through the centre of each plotted point. ♦ The bars of a **bar graph** must have clear tops, with straight lines (not just shading to give an approximation of the top). ♦ The bars of a **bar graph** can be of any/variable width, except for single lines, which are not considered to be bars.

Criteria	Expected response	Max mark	Additional guidance	Notes
				Tables ♦ Every column in a table must have a clear heading. ♦ Units should be indicated in brackets below the column heading and not after every entry in the table. When using graphing packages, all major and minor gridlines should be included. Points should be visible but not excessively large.
Analyse data/information	Data/information is analysed	2	**Analysis** will include interpreting data/information included in the report (which may/may not have been processed by the candidate) to identify relationships. This may include further calculations.	Candidates may use either raw data/information (eg graphs or tables from the internet, journals) that they have included, or their processed data/information or a combination of both. Analysis should normally involve calculations, eg percentage changes, average increases etc. Calculations given without any context/explanation will not be enough to attain the analysis marks. Analysis may include comparisons, determining patterns and trends, discussion of experimental results, describing what graphs show, etc. **2 marks** for fully analysing

Criteria	Expected response	Max mark	Additional guidance	Notes
			2 marks for **correctly** analysing the data/information. **1 mark** for some correct analysis of the data/information. **0 marks**: The candidate fails to meet the minimum standards required for 1 mark.	data/information from at least two sources. **1 mark** for fully analysing one set of data/information. **or** **1 mark** for a partial analysis of two data sources that involves a comparison between them.
Conclusion(s)	States valid conclusion(s)	1	**1 mark** for stating a conclusion that relate(s) to the aim(s) and is supported by evidence from the candidate's research. **0 marks**: The candidate fails to meet the minimum standards required for 1 mark.	If no aim has been stated then the mark cannot be awarded. Although the conclusion may relate to the aim, it must be supported by information in their report, otherwise the conclusion mark cannot be awarded. Where the data is giving an indirect measure of the aim then the link must be stated somewhere in the report to access the conclusion mark, eg Aim — to investigate the effect of altitude training on athletic performance. Data included shows an increase in red blood cell production. The candidate must state that this would improve athletic performance to gain the

Criteria	Expected response	Max mark	Additional guidance	Notes
				conclusion mark. If the candidate states multiple aims, then the conclusion must relate to all aims given (unless the candidate later stated that the aim was modified to narrow the focus). If it is appropriate for the data this mark can be awarded if the candidate **explains why** the data does not allow a conclusion to be drawn.
Evaluation	Evaluation of the investigation	3	For marks to be awarded for evaluation, candidates must make judgements based on criteria. The criteria, upon which judgements of the investigation are made, may include the following (not an exhaustive list): ♦ robustness of findings ♦ validity of sources ♦ reliability of data/information ♦ evaluation of (experimental) procedure **1 mark** for each valid, evaluative comment based on relevant criteria, to a maximum of 3 marks. **0 marks**: The candidate has not met	Each comment must be supported by appropriate justification, for example: Robustness — findings are supported by other **named** sources. Validity of sources — explanation of why a source might be considered to be biased/unbiased, have key variables been controlled? Reliability of data/information — from a scientific journal, sample size, repeated results. Where the terms valid, reliable and robust are used they must be correct to access these marks.

Criteria	Expected response	Max mark	Additional guidance	Notes
			the standards described for 1 mark.	Evaluation of procedures — suitability, effectiveness, control of variables, limitations of equipment, sources of error, use of control experiments, suggestions for improvement.
Presentation	Appropriate presentation References	2	Maximum of **2 marks** for the presentation of the report. **1 mark** for each of: ♦ appropriate title and structure ♦ the references to at least two sources used in the report given in sufficient detail to allow them to be retrieved by a third party — if one of the sources is an experiment/practical activity, then the title and the aim should be recorded.	The passive voice is the preferred style for report writing, but this is not a requirement. The structure of the report does not need to follow the structure listed in the Marking Instructions or Candidates' Guide. Although references may appear within the body of the report they must also appear at the end of the report. If one of the sources is an experiment/ practical activity, then **only** the title of the experiment/practical activity and aim are required as raw data has been dealt with elsewhere. References of websites must be complete URL addresses — www.bbc.co.uk is not acceptable. References of text books must include

Criteria	Expected response	Max mark	Additional guidance	Notes
				title, author, page number and either ISBN number or version/edition number. References of journals must include journal title, author, volume and page number. At least two references must be given correctly to access this mark.
		20		

Administrative information

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History of changes

Version	Description of change	Authorised by	Date
1.1	Detailed Marking Instructions amended to include a column of additional notes.	Qualifications Manager	September 2014
1.2	Detailed Marking Instructions updated to further exemplify Marking Instructions.	Qualifications Manager	September 2015
1.3	Detailed Marking Instructions updated to further exemplify Marking Instructions.	Qualifications Manager	September 2016

Security and confidentiality

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